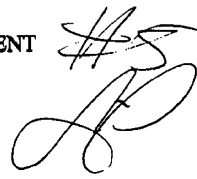


Attorney Docket No.: 5709.200-U.S.

PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Svendsen et al.

Serial No.: 09/441,313

Group Art Unit: 1652

Filed: November 16, 1999

Examiner: Rick Hutson

For: α -amylase variants

**REQUEST TRANSFER OF COMPUTER READABLE
SEQUENCE LISTING FROM PARENT CASE**

Assistant Commissioner for Patents
Washington, DC 20231

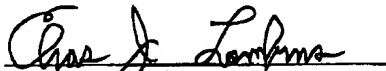
Sir:

The computer-readable form in this application, Serial no. 09/441,313 is identical with that filed in Application Serial No. 09/193,068 filed on November 16, 1998. In accordance with 37 CFR 1.821(e), please use the April 7, 1999 computer readable form filed in that application as the computer readable form for the instant application. It is understood that the Patent and Trademark Office will make the necessary change in application number and filing date for the computer readable form that will be used for the instant application.

The Examiner is hereby to contact the undersigned if there are any questions concerning this response.

Respectfully submitted,

Date: May 11, 2000



Elias J. Lambiris, Reg. No. 33,728
Novo Nordisk of North America, Inc.
405 Lexington Avenue, Suite 6400
New York, NY 10174-6401
(212) 867-0123

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Svendsen et al.

Serial No.: 09/441,313

Group Art Unit: 1652

Filed: November 16, 1999

Examiner: R. Hutson

For: α -amylase variants

CERTIFICATE OF FACSIMILE TRANSMISSION

Assistant Commissioner for Patents
Washington, DC 20231

Sir:


I hereby certify that the attached correspondence comprising:

1. Request Transfer of Computer Readable Sequence Listing From Parent Case

was sent to the United States Patent Office by telefax to the attention of Examiner R. Hutson, fax number (703) 308-0294.

Respectfully submitted,

Date: May 11, 2000


Carol McFarlane
Novo Nordisk of North America, Inc.
405 Lexington Avenue, Suite 6400
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(212) 867-0123

NOVO NORDISK OF NORTH AMERICA, INC.
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NEW YORK, NEW YORK 10174-6401

Telephone: (212) 867-0123

FAX: (212) 878-9655

CORPORATE PATENTS

TELECOPY

Page 1 Of 3 Page(s)

Please Hand Deliver The Following To:

TO : USPTO
Examiner R. Hutson
(703) 308-0294
CC :
FROM : Carol McFarlane
DATE : May 11, 2000
MESSAGE :

IF ANY PROBLEMS OCCUR, PLEASE CALL
LOREN HERNANDEZ (212) 867-0123
Fax. (212) 878-9655

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R. H. tson

PAGE: 1

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/441,313

DATE: 05/11/2000
TIME: 13:02:51

Input Set: I441313.RAW

This Raw Listing contains the General Information
Section and up to first 5 pages.

ENTERED

1 <110> APPLICANT: Svendsen, Allan
2 Kjrulff, S ren
3 Bisgaard-Frantzen, Henrik
4 Andersen, Carsten
5 <120> TITLE OF INVENTION: -Amylase Variants
6 <130> FILE REFERENCE: 5709.000-US
7 <140> CURRENT APPLICATION NUMBER: US/09/441,313
8 <141> CURRENT FILING DATE: 1999-11-16
9 <150> EARLIER APPLICATION NUMBER: 09/193,068
10 <151> EARLIER FILING DATE: 1998-11-16
11 <160> NUMBER OF SEQ ID NOS: 31
12 <170> SOFTWARE: FastSEQ for Windows Version 3.0
13 <210> SEQ ID NO 1
14 <211> LENGTH: 485
15 <212> TYPE: PRT
16 <213> ORGANISM: Bacillus sp.
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20 Leu Pro Asn Asp Gly Asn His Trp Asn Arg Leu Arg Asp Asp Ala Ala
21 20 25 30
22 Asn Leu Lys Ser Lys Gly Ile Thr Ala Val Trp Ile Pro Pro Ala Trp
23 35 40 45
24 Lys Gly Thr Ser Gln Asn Asp Val Gly Tyr Gly Ala Tyr Asp Leu Tyr
25 50 55 60
26 Asp Leu Gly Glu Phe Asn Gln Lys Gly Thr Val Arg Thr Lys Tyr Gly
27 65 70 75 80
28 Thr Arg Asn Gln Leu Gln Ala Ala Val Thr Ser Leu Lys Asn Asn Gly
29 85 90 95
30 Ile Gln Val Tyr Gly Asp Val Val Met Asn His Lys Gly Gly Ala Asp
31 100 105 110
32 Gly Thr Glu Ile Val Asn Ala Val Glu Val Asn Arg Ser Asn Arg Asn
33 115 120 125
34 Gln Glu Thr Ser Gly Glu Tyr Ala Ile Glu Ala Trp Thr Lys Phe Asp
35 130 135 140
36 Phe Pro Gly Arg Gly Asn Asn His Ser Ser Phe Lys Trp Arg Trp Tyr
37 145 150 155 160
38 His Phe Asp Gly Thr Asp Trp Asp Gln Ser Arg Gln Leu Gln Asn Lys
39 165 170 175
40 Ile Tyr Lys Phe Arg Gly Thr Gly Lys Ala Trp Asp Trp Glu Val Asp
41 180 185 190
42 Thr Glu Asn Gly Asn Tyr Asp Tyr Leu Met Tyr Ala Asp Val Asp Met
43 195 200 205
44 Asp His Pro Glu Val Ile His Glu Leu Arg Asn Trp Gly Val Trp Tyr

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/441,313

 DATE: 05/11/2000
 TIME: 13:02:51

Input Set: I441313.RAW

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45          210          215          220
46  Thr Asn Thr Leu Asn Leu Asp Gly Phe Arg Ile Asp Ala Val Lys His
47  225          230          235          240
48  Ile Lys Tyr Ser Phe Thr Arg Asp Trp Leu Thr His Val Arg Asn Thr
49          245          250          255
50  Thr Gly Lys Pro Met Phe Ala Val Ala Glu Phe Trp Lys Asn Asp Leu
51          260          265          270
52  Gly Ala Ile Glu Asn Tyr Leu Asn Lys Thr Ser Trp Asn His Ser Val
53          275          280          285
54  Phe Asp Val Pro Leu His Tyr Asn Leu Tyr Asn Ala Ser Asn Ser Gly
55          290          295          300
56  Gly Tyr Tyr Asp Met Arg Asn Ile Leu Asn Gly Ser Val Val Gln Lys
57  305          310          315          320
58  His Pro Thr His Ala Val Thr Phe Val Asp Asn His Asp Ser Gln Pro
59          325          330          335
60  Gly Glu Ala Leu Glu Ser Phe Val Gln Gln Trp Phe Lys Pro Leu Ala
61          340          345          350
62  Tyr Ala Leu Val Leu Thr Arg Glu Gln Gly Tyr Pro Ser Val Phe Tyr
63          355          360          365
64  Gly Asp Tyr Tyr Gly Ile Pro Thr His Gly Val Pro Ala Met Lys Ser
65          370          375          380
66  Lys Ile Asp Pro Leu Leu Gln Ala Arg Gln Thr Phe Ala Tyr Gly Thr
67  385          390          395          400
68  Gln His Asp Tyr Phe Asp His His Asp Ile Ile Gly Trp Thr Arg Glu
69          405          410          415
70  Gly Asn Ser Ser His Pro Asn Ser Gly Leu Ala Thr Ile Met Ser Asp
71          420          425          430
72  Gly Pro Gly Gly Asn Lys Trp Met Tyr Val Gly Lys Asn Lys Ala Gly
73          435          440          445
74  Gln Val Trp Arg Asp Ile Thr Gly Asn Arg Thr Gly Thr Val Thr Ile
75          450          455          460
76  Asn Ala Asp Gly Trp Gly Asn Phe Ser Val Asn Gly Gly Ser Val Ser
77  465          470          475          480
78  Val Trp Val Lys Gln
79          485
80  <210> SEQ ID NO 2
81  <211> LENGTH: 485
82  <212> TYPE: PRT
83  <213> ORGANISM: Bacillus sp.
84  <400> SEQUENCE: 2
85  His His Asn Gly Thr Asn Gly Thr Met Met Gln Tyr Phe Glu Trp His
86  1          5          10          15
87  Leu Pro Asn Asp Gly Asn His Trp Asn Arg Leu Arg Asp Asp Ala Ser
88          20          25          30
89  Asn Leu Arg Asn Arg Gly Ile Thr Ala Ile Trp Ile Pro Pro Ala Trp
90          35          40          45
91  Lys Gly Thr Ser Gln Asn Asp Val Gly Tyr Gly Ala Tyr Asp Leu Tyr
92          50          55          60
93  Asp Leu Gly Glu Phe Asn Gln Lys Gly Thr Val Arg Thr Lys Tyr Gly
94  65          70          75          80

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RAW SEQUENCE LISTING
PATENT APPLICATION US/09/441,313

 DATE: 05/11/2000
 TIME: 13:02:51

Input Set: I441313.RAW

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 95 | Thr | Arg | Ser | Gln | Leu | Glu | Ser | Ala | Ile | His | Ala | Leu | Lys | Asn | Asn | Gly |
| 96 | | | | | 85 | | | | | 90 | | | | | 95 | |
| 97 | Val | Gln | Val | Tyr | Gly | Asp | Val | Val | Met | Asn | His | Lys | Gly | Gly | Ala | Asp |
| 98 | | | | 100 | | | | | 105 | | | | | 110 | | |
| 99 | Ala | Thr | Glu | Asn | Val | Leu | Ala | Val | Glu | Val | Asn | Pro | Asn | Asn | Arg | Asn |
| 100 | | | 115 | | | | | 120 | | | | | 125 | | | |
| 101 | Gln | Glu | Ile | Ser | Gly | Asp | Tyr | Thr | Ile | Glu | Ala | Trp | Thr | Lys | Phe | Asp |
| 102 | | 130 | | | | | 135 | | | | | 140 | | | | |
| 103 | Phe | Pro | Gly | Arg | Gly | Asn | Thr | Tyr | Ser | Asp | Phe | Lys | Trp | Arg | Trp | Tyr |
| 104 | 145 | | | | | 150 | | | | 155 | | | | | | 160 |
| 105 | His | Phe | Asp | Gly | Val | Asp | Trp | Asp | Gln | Ser | Arg | Gln | Phe | Gln | Asn | Arg |
| 106 | | | | 165 | | | | | 170 | | | | | 175 | | |
| 107 | Ile | Tyr | Lys | Phe | Arg | Gly | Asp | Gly | Lys | Ala | Trp | Asp | Trp | Glu | Val | Asp |
| 108 | | | 180 | | | | | | 185 | | | | 190 | | | |
| 109 | Ser | Glu | Asn | Gly | Asn | Tyr | Asp | Tyr | Leu | Met | Tyr | Ala | Asp | Val | Asp | Met |
| 110 | | | 195 | | | | | 200 | | | | 205 | | | | |
| 111 | Asp | His | Pro | Glu | Val | Val | Asn | Glu | Leu | Arg | Arg | Trp | Gly | Glu | Trp | Tyr |
| 112 | | 210 | | | | | 215 | | | | 220 | | | | | |
| 113 | Thr | Asn | Thr | Leu | Asn | Leu | Asp | Gly | Phe | Arg | Ile | Asp | Ala | Val | Lys | His |
| 114 | 225 | | | | | 230 | | | | 235 | | | | | | 240 |
| 115 | Ile | Lys | Tyr | Ser | Phe | Thr | Arg | Asp | Trp | Leu | Thr | His | Val | Arg | Asn | Ala |
| 116 | | | | 245 | | | | | 250 | | | | | 255 | | |
| 117 | Thr | Gly | Lys | Glu | Met | Phe | Ala | Val | Ala | Glu | Phe | Trp | Lys | Asn | Asp | Leu |
| 118 | | | 260 | | | | | | 265 | | | | 270 | | | |
| 119 | Gly | Ala | Leu | Glu | Asn | Tyr | Leu | Asn | Lys | Thr | Asn | Trp | Asn | His | Ser | Val |
| 120 | | | 275 | | | | | 280 | | | | 285 | | | | |
| 121 | Phe | Asp | Val | Pro | Leu | His | Tyr | Asn | Leu | Tyr | Asn | Ala | Ser | Asn | Ser | Gly |
| 122 | | 290 | | | | | 295 | | | | 300 | | | | | |
| 123 | Gly | Asn | Tyr | Asp | Met | Ala | Lys | Leu | Leu | Asn | Gly | Thr | Val | Val | Gln | Lys |
| 124 | 305 | | | | | 310 | | | | 315 | | | | | | 320 |
| 125 | His | Pro | Met | His | Ala | Val | Thr | Phe | Val | Asp | Asn | His | Asp | Ser | Gln | Pro |
| 126 | | | | 325 | | | | | 330 | | | | | 335 | | |
| 127 | Gly | Glu | Ser | Leu | Glu | Ser | Phe | Val | Gln | Glu | Trp | Phe | Lys | Pro | Leu | Ala |
| 128 | | | 340 | | | | | | 345 | | | | 350 | | | |
| 129 | Tyr | Ala | Leu | Ile | Leu | Thr | Arg | Glu | Gln | Gly | Tyr | Pro | Ser | Val | Phe | Tyr |
| 130 | | | 355 | | | | | 360 | | | | | 365 | | | |
| 131 | Gly | Asp | Tyr | Tyr | Gly | Ile | Pro | Thr | His | Ser | Val | Pro | Ala | Met | Lys | Ala |
| 132 | | 370 | | | | | 375 | | | | | 380 | | | | |
| 133 | Lys | Ile | Asp | Pro | Ile | Leu | Glu | Ala | Arg | Gln | Asn | Phe | Ala | Tyr | Gly | Thr |
| 134 | 385 | | | | | 390 | | | | 395 | | | | | | 400 |
| 135 | Gln | His | Asp | Tyr | Phe | Asp | His | His | Asn | Ile | Ile | Gly | Trp | Thr | Arg | Glu |
| 136 | | | | 405 | | | | | 410 | | | | | 415 | | |
| 137 | Gly | Asn | Thr | Thr | His | Pro | Asn | Ser | Gly | Leu | Ala | Thr | Ile | Met | Ser | Asp |
| 138 | | | 420 | | | | | | 425 | | | | 430 | | | |
| 139 | Gly | Pro | Gly | Gly | Glu | Lys | Trp | Met | Tyr | Val | Gly | Gln | Asn | Lys | Ala | Gly |
| 140 | | | 435 | | | | | 440 | | | | | 445 | | | |
| 141 | Gln | Val | Trp | His | Asp | Ile | Thr | Gly | Asn | Lys | Pro | Gly | Thr | Val | Thr | Ile |
| 142 | | 450 | | | | | 455 | | | | | 460 | | | | |
| 143 | Asn | Ala | Asp | Gly | Trp | Ala | Asn | Phe | Ser | Val | Asn | Gly | Gly | Ser | Val | Ser |
| 144 | 465 | | | | | 470 | | | | 475 | | | | | | 480 |

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/441,313

 DATE: 05/11/2000
 TIME: 13:02:51

Input Set: I441313.RAW

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145      Ile Trp Val Lys Arg
146                               485
147 <210> SEQ ID NO 3
148 <211> LENGTH: 514
149 <212> TYPE: PRT
150 <213> ORGANISM: B. stearothermophilus
151 <400> SEQUENCE: 3
152      Ala Ala Pro Phe Asn Gly Thr Met Met Gln Tyr Phe Glu Trp Tyr Leu
153      1          5          10          15
154      Pro Asp Asp Gly Thr Leu Trp Thr Lys Val Ala Asn Glu Ala Asn Asn
155      20          25          30
156      Leu Ser Ser Leu Gly Ile Thr Ala Leu Trp Leu Pro Pro Ala Tyr Lys
157      35          40          45
158      Gly Thr Ser Arg Ser Asp Val Gly Tyr Gly Val Tyr Asp Leu Tyr Asp
159      50          55          60
160      Leu Gly Glu Phe Asn Gln Lys Gly Ala Val Arg Thr Lys Tyr Gly Thr
161      65          70          75          80
162      Lys Ala Gln Tyr Leu Gln Ala Ile Gln Ala Ala His Ala Ala Gly Met
163      85          90          95
164      Gln Val Tyr Ala Asp Val Val Phe Asp His Lys Gly Gly Ala Asp Gly
165      100         105         110
166      Thr Glu Trp Val Asp Ala Val Glu Val Asn Pro Ser Asp Arg Asn Gln
167      115         120         125
168      Glu Ile Ser Gly Thr Tyr Gln Ile Gln Ala Trp Thr Lys Phe Asp Phe
169      130         135         140
170      Pro Gly Arg Gly Asn Thr Tyr Ser Ser Phe Lys Trp Arg Trp Tyr His
171      145         150         155         160
172      Phe Asp Gly Val Asp Trp Asp Glu Ser Arg Lys Leu Ser Arg Ile Tyr
173      165         170         175
174      Lys Phe Arg Gly Ile Gly Lys Ala Trp Asp Trp Glu Val Asp Thr Glu
175      180         185         190
176      Asn Gly Asn Tyr Asp Tyr Leu Met Tyr Ala Asp Leu Asp Met Asp His
177      195         200         205
178      Pro Glu Val Val Thr Glu Leu Lys Ser Trp Gly Lys Trp Tyr Val Asn
179      210         215         220
180      Thr Thr Asn Ile Asp Gly Phe Arg Leu Asp Ala Val Lys His Ile Lys
181      225         230         235         240
182      Phe Ser Phe Phe Pro Asp Trp Leu Ser Asp Val Arg Ser Gln Thr Gly
183      245         250         255
184      Lys Pro Leu Phe Thr Val Gly Glu Tyr Trp Ser Tyr Asp Ile Asn Lys
185      260         265         270
186      Leu His Asn Tyr Ile Met Lys Thr Asn Gly Thr Met Ser Leu Phe Asp
187      275         280         285
188      Ala Pro Leu His Asn Lys Phe Tyr Thr Ala Ser Lys Ser Gly Gly Thr
189      290         295         300
190      Phe Asp Met Arg Thr Leu Met Thr Asn Thr Leu Met Lys Asp Gln Pro
191      305         310         315         320
192      Thr Leu Ala Val Thr Phe Val Asp Asn His Asp Thr Glu Pro Gly Gln
193      325         330         335
194      Ala Leu Gln Ser Trp Val Asp Pro Trp Phe Lys Pro Leu Ala Tyr Ala

```

RAW SEQUENCE LISTING
PATENT APPLICATION US/09/441,313

 DATE: 05/11/2000
 TIME: 13:02:51

Input Set: I441313.RAW

```

195          340          345          350
196 Phe Ile Leu Thr Arg Gln Glu Gly Tyr Pro Cys Val Phe Tyr Gly Asp
197          355          360          365
198 Tyr Tyr Gly Ile Pro Gln Tyr Asn Ile Pro Ser Leu Lys Ser Lys Ile
199          370          375          380
200 Asp Pro Leu Leu Ile Ala Arg Arg Asp Tyr Ala Tyr Gly Thr Gln His
201          385          390          395          400
202 Asp Tyr Leu Asp His Ser Asp Ile Ile Gly Trp Thr Arg Glu Gly Val
203          405          410          415
204 Thr Glu Lys Pro Gly Ser Gly Leu Ala Ala Leu Ile Thr Asp Gly Pro
205          420          425          430
206 Gly Gly Ser Lys Trp Met Tyr Val Gly Lys Gln His Ala Gly Lys Val
207          435          440          445
208 Phe Tyr Asp Leu Thr Gly Asn Arg Ser Asp Thr Val Thr Ile Asn Ser
209          450          455          460
210 Asp Gly Trp Gly Glu Phe Lys Val Asn Gly Gly Ser Val Ser Val Trp
211          465          470          475          480
212 Val Pro Arg Lys Thr Thr Val Ser Thr Ile Ala Trp Ser Ile Thr Thr
213          485          490          495
214 Arg Pro Trp Thr Asp Glu Phe Val Arg Trp Thr Glu Pro Arg Leu Val
215          500          505          510
216 Ala Trp
217 <210> SEQ ID NO 4
218 <211> LENGTH: 483
219 <212> TYPE: PRT
220 <213> ORGANISM: B. licheniformis
221 <400> SEQUENCE: 4
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224 Asn Asp Gly Gln His Trp Arg Arg Leu Gln Asn Asp Ser Ala Tyr Leu
225 20 25 30
226 Ala Glu His Gly Ile Thr Ala Val Trp Ile Pro Pro Ala Tyr Lys Gly
227 35 40 45
228 Thr Ser Gln Ala Asp Val Gly Tyr Gly Ala Tyr Asp Leu Tyr Asp Leu
229 50 55 60
230 Gly Glu Phe His Gln Lys Gly Thr Val Arg Thr Lys Tyr Gly Thr Lys
231 65 70 75 80
232 Gly Glu Leu Gln Ser Ala Ile Lys Ser Leu His Ser Arg Asp Ile Asn
233 85 90 95
234 Val Tyr Gly Asp Val Val Ile Asn His Lys Gly Gly Ala Asp Ala Thr
235 100 105 110
236 Glu Asp Val Thr Ala Val Glu Val Asp Pro Ala Asp Arg Asn Arg Val
237 115 120 125
238 Ile Ser Gly Glu His Leu Ile Lys Ala Trp Thr His Phe His Phe Pro
239 130 135 140
240 Gly Arg Gly Ser Thr Tyr Ser Asp Phe Lys Trp His Trp Tyr His Phe
241 145 150 155 160
242 Asp Gly Thr Asp Trp Asp Glu Ser Arg Lys Leu Asn Arg Ile Tyr Lys
243 165 170 175
244 Phe Gln Gly Lys Ala Trp Asp Trp Glu Val Ser Asn Glu Asn Gly Asn

```

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Input Set: I441313.RAW

| Line | ? Error/Warning | Original Text |
|------|---------------------------------------|---|
| 745 | W "N" or "Xaa" used: Feature required | gcgttttgcc ggccgacata nnnnnnnnnn nnnnnnnn |
| 746 | W "N" or "Xaa" used: Feature required | nncaaacctg aatt |
| 756 | W "N" or "Xaa" used: Feature required | gcnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnn |
| 766 | W "N" or "Xaa" used: Feature required | gtcgccttcc ctgtgccann nnnnnnnnnn nnnnnnnn |
| 784 | W "N" or "Xaa" used: Feature required | taagatcggt tcaattttnn nnnnnnnnnn nnnnnnnn |
| 802 | W "N" or "Xaa" used: Feature required | ttccatgctg catcgacaca gggaggcggc tatgat |
| 803 | W "N" or "Xaa" used: Feature required | nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnn |
| 820 | W "N" or "Xaa" used: Feature required | gtccaaacat ggtttaagcc nnnnnnnnnn nnnnnnnn |
| 821 | W "N" or "Xaa" used: Feature required | nntcaggtt tctacgggga |